



Internet of Things for improved operations in the Arctic
ARC-REACH

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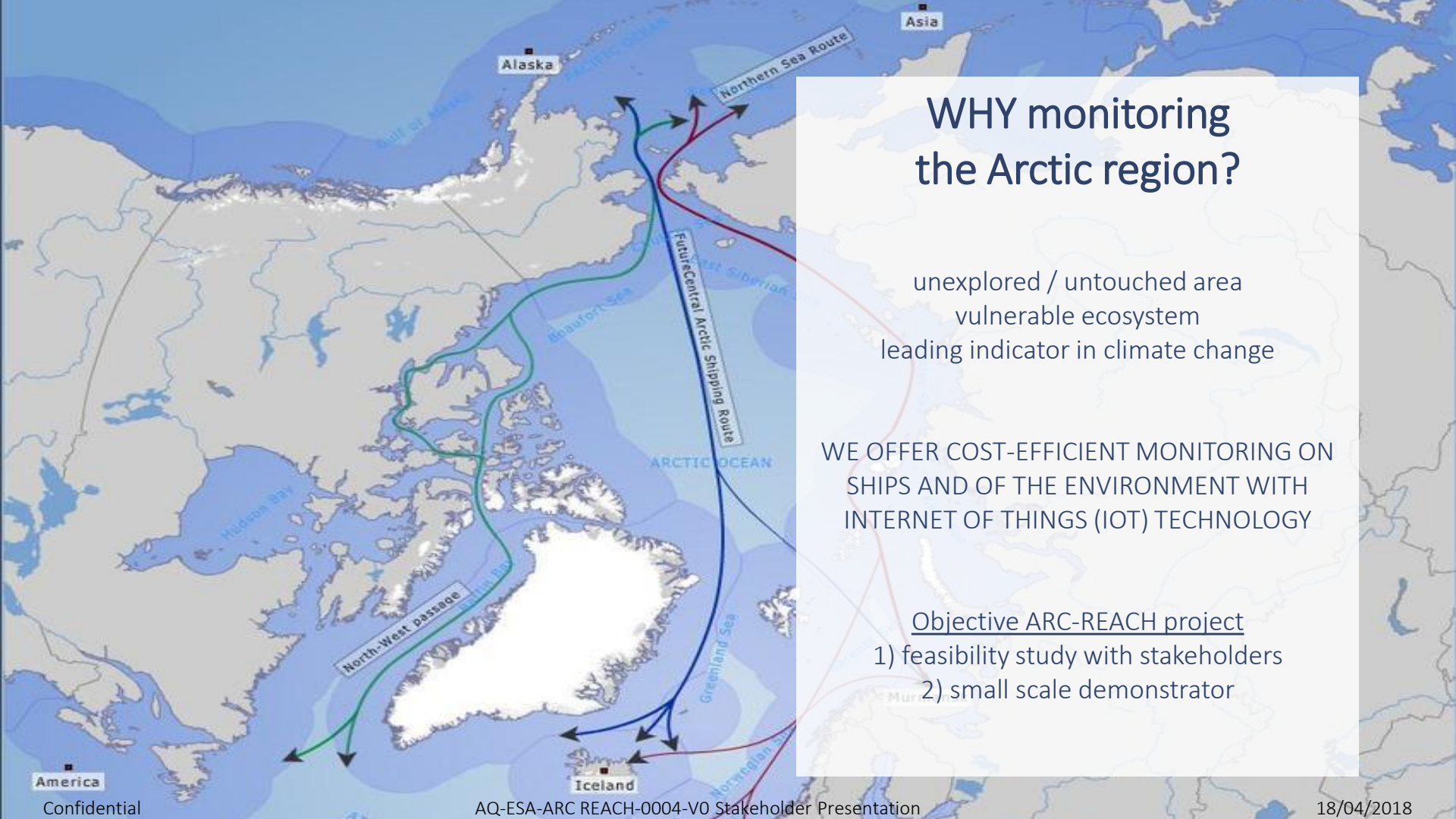
Confidential – powered by ESA Kickstarter

KICKSTART

European Space Agency funds projects which combine **proven technology** to make a **real difference in the world** in the next years.

ARC-Reach

- approved by ESA for the kickstart
- feasibility and small demonstrator
- April 2018 - October 2018
- 2 main technology partners
 - AntarctiQ: tech expert in extreme environments
 - Sensolus: market leader in low-power sensing (tracking)



WHY monitoring the Arctic region?

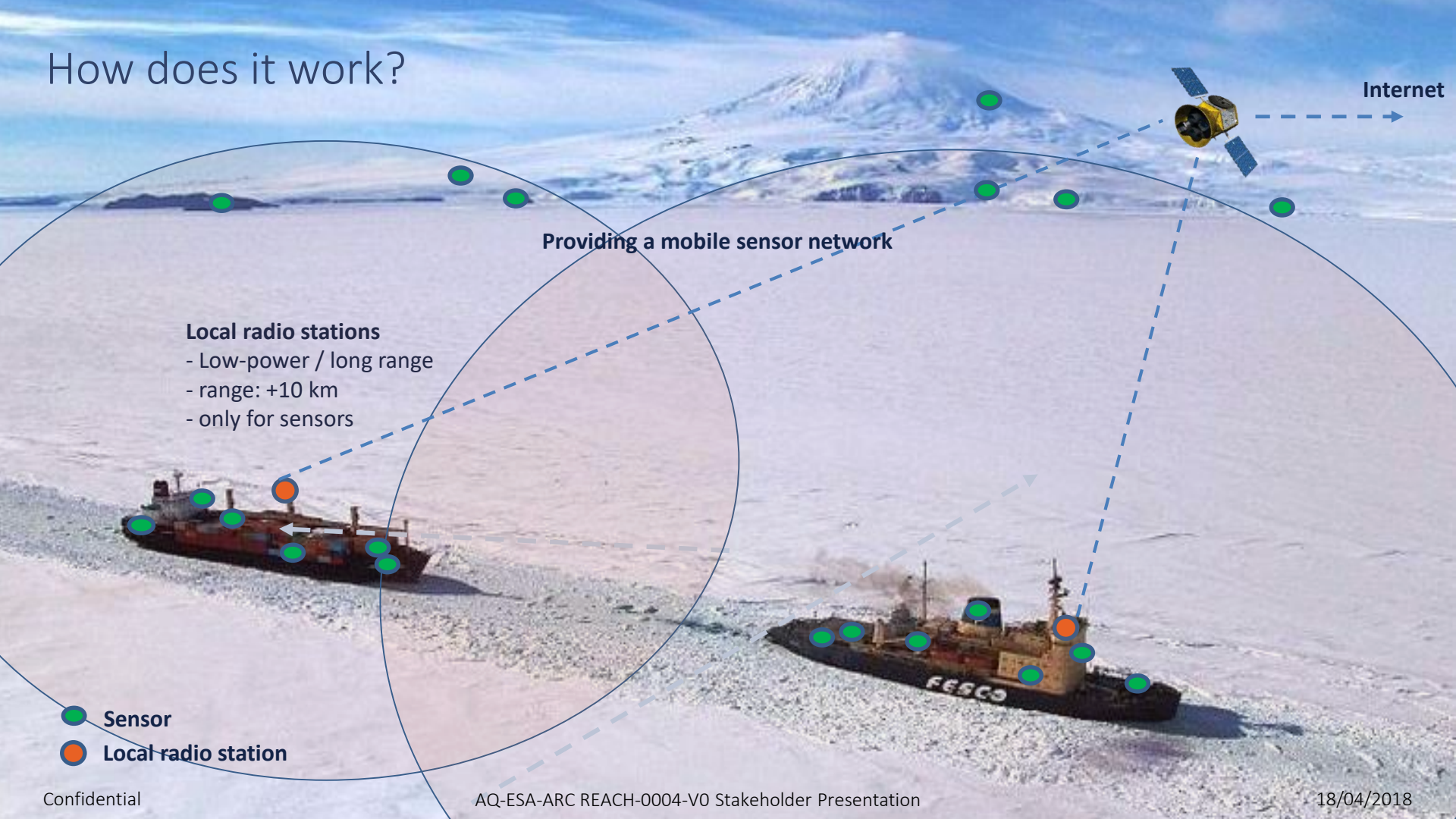
- unexplored / untouched area
- vulnerable ecosystem
- leading indicator in climate change

WE OFFER COST-EFFICIENT MONITORING ON SHIPS AND OF THE ENVIRONMENT WITH INTERNET OF THINGS (IOT) TECHNOLOGY

Objective ARC-REACH project

- 1) feasibility study with stakeholders
- 2) small scale demonstrator

How does it work?



What to measure?

1

On Ship

- Smoke/Fire
- Leakage
- Temperature
- Humidity
- Air quality
- Water quality
- Gas leak
- Replenishment

2

Equipment monitoring

- Pumps
- Engines
- Tanks
- Pipes (leakage)
- Batteries
- Waste bins
- Bilges

3

Science / Environmental monitoring

- Field data
- Local environmental data
- Ice data
- Localisation data
- Movement data
- Etc.

4

Device monitoring

- Life vests
- Defibrillators
- Fire extinguishers
- Hatches, doors/gates
- Refrigerators
- Meters

5

Container

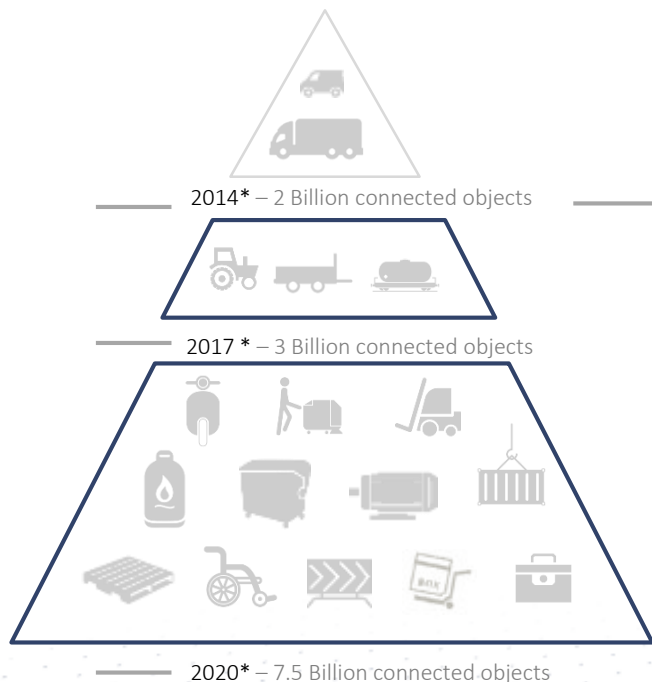
- Location
- Temperature
- Humidity
- Vibration and shocks
- Tamper evidence
- Gas/smoke

6

Off ship

- Man over board
- Life boat monitoring

The technology behind



*: Gartner 2017 – Industrial IoT – connected objects

The old world

Wiring / infrastructure

High cost of ownership

The new era – powered by SENSOLUS



Self-install sensors in less than 1 minute



Low-power, long-range technology



+5 yrs battery



Direct cloud connection through ship operator network



Proven technology : +5 Million sensors in the field

Value proposition

- Reduced cost
- Data in remote areas
- Less dependency satellite connection
- Ship owners: for themselves and customers: additional service
 - Track cargo handling
 - Track cargo transport
 - Track cargo losses
 - Improve security
- Governments & National operators
 - Increase monitoring
 - Additional data: volume & coverage
 - Targeted interventions
 - Limit environmental damage
- Scientific community
 - Increase monitoring
 - Additional data: volume & coverage



Step 1: 2018 - Market analysis & feasibility

- mailing / interview
- expectations of the stakeholders:
 - Ship owners
 - national operators
 - research communities

Step 2: 2018 – Small scale demonstrator

- technical test with a ship operator – 1 week

Step 3: 2019 – Demonstrator on scale

Support ARC-REACH as a stakeholder

Think global!



Cooperate on something that matters to all us!

State of the art technology



Get the latest insights on the application of Internet of Things for Arctic operations

Community effort



Contribute as a stakeholder and share your needs and requirements.

